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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,891	03/31/2004	Todd Schneider	881-011758-US (PAR)	9081

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EXAMINER	
FAULK, DEVONA E	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/815,891	SCHNEIDER ET AL.
	Examiner	Art Unit
	Devona E. Faulk	2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10-19,21-28* is/are rejected.

7)☒ Claim(s) *9,20 and 29-35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/3/2007*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

1. The information disclosure statement filed 8/3/2007 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

2. Claims 9,20,29-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5,7,8,10-13,15,17-19,21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Brennan et al. (US 6,236,731).

Regarding claim 1, Brennan discloses a method of providing protection again acoustic shock, the method comprising the steps of:

performing a pattern analysis on an input signal to identify a parameter space corresponding to a signal space of the input signal (analysis filterbank 26 performs a pattern analysis on an input signal, Figure 1; column 4, lines 41-52);

applying a rule-based decision to the parameter space to detect an acoustic shock event (inherent in digital signal processor 34; processor 34 determines gain adjustments based on characteristics of the frequency band signals and determines when those adjustments need to be made, column 10, lines 23-29 and 37-47; since a determination is made as to when gain adjustments need to be made, it is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this reads on the claim language as recited with the rule-based decision being whatever is used to make the decision that the gain needs to be adjusted); and

removing the acoustic shock event (signal processor 34, Figure 1 determines gain adjustments which read on removing the acoustic shock event, Figure 1; column 10 , lines 23-37 and 37-47).

Claim 2 is dependent upon claim 1. Regarding claim 2, Brennan discloses performing a feature extraction from the input signal to identify the parameter space (as noted above signal processor 34 determines gain adjust and thus inherently include detecting levels of the input signals that are input to the digital signal processor; the level detection reads on feature extraction).

Claim 3 is dependent upon claim 1. Regarding claim 3, Brennan discloses wherein the step of removing the acoustic shock event includes the step of gain control (see Brennan as applied to the removing the acoustic shock event step of claim 1).

Claim 4 is dependent upon claim 3. Regarding claim 4, Brennan discloses wherein the gain control is performed by a state machine. As noted above, Brennan teaches that the signal processor performs the gain control. This signal processor reads on state machine.

Claim 5 is dependent upon claim 1. Regarding claim 5, Brennan discloses performing calibration to keep an output signal provided to a user at a specific level. Brennan further teaches of multipliers 28 which multiply each signal by a desired gain (column 4, lines 44-45). This reads on the recited claim language.

Regarding claim 7, Brennan discloses a method of providing protection against acoustic shock, the method comprising the steps of:

performing a weighted overlap-add (WOLA) analysis on an input signal (analysis filterbank 26 is a weighted overlap-add filterbank, Figure 3; column 6, lines 29-32);

performing feature extraction on the input signal and performing feature extraction on the band signals provided by the WOLA analysis (signal processor determines gain adjustments based on the characteristics of the frequency band signals , the characteristics of the frequency band signals reads on feature extraction; column 10 ,lines 23-27 and lines 45-49);

detecting an acoustic shock event based on the input signal and band signal feature extractions (inherent in digital signal processor 34; processor 34 determines

gain adjustments based on characteristics of the frequency band signals and determines when those adjustments need to be made, column 10, lines 23-29 and 37-47; since a determination is made as to when gain adjustments need to be made, it is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this reads on the 0claim language as recited with the rule-based decision being whatever is used to make the decision that the gain needs to be adjusted);

performing gain control based on the shock detection and the features extracted from the input signal and band signals (as noted above signal processor 34 determines gain adjustments based on the characteristics of the frequency band signals and also determines when adjustments need to be made, column 10, lines 23-29 and 37-47 ; the characteristics of the frequency band signals would inherently include the level of the signals, the level detection reads on features extracted; column 10, lines 24-28);

applying a calibrated gain to meet a predetermined safe output level (Brennan further teaches of multipliers 28 which multiply each signal by a desired gain; column 4, lines 44-45) ; and

performing a WOLA synthesis on modified band signals to synthesize an output signal where the band signals are by the gain control (synthesis filterbank 30 is a weighted overlap-add filterbank, Figures 4 and 4a; column 8, lines 33-65).

Claim 8 is dependent upon claim 7. Regarding claim 8, Brennan discloses wherein the step of detecting an acoustic shock event uses a rule-based decision. As noted above, Brennan teaches that the signal processor 34 determines gain

adjustments based on characteristics of the frequency band signals and determines when gain adjustments are to be made and therefore inherently comprises a detection module. It is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this all reads on the claim language as recited with the rule-based decision being whatever is used to make the decision that the gain needs to be adjusted.

Regarding claim 10, Brennan discloses a system for providing protection against acoustic shock (Figure 1), the device comprising:

an analysis module for performing a pattern analysis on an input signal to identify a parameter space corresponding to a signal space of the input signal (analysis filterbank 26 identifies a parameter space, Figure 1; column 4, lines 41-52);

a detection module for applying a rule-based decision to the parameter space to detect an acoustic shock event (inherent in digital signal processor 34; processor 34 determines gain adjustments based on characteristics of the frequency band signals and determines when those adjustments need to be made, column 10, lines 23-29 and 37-47; since a determination is made as to when gain adjustments need to be made, it is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this reads on the 0claim language as recited with the rule-based decision being whatever is used to make the decision that the gain needs to be adjusted); and

a removal module for removing the acoustic shock event (digital signal processor 34 determines gain adjustments that are to be applied to the signals, therefore the

signal processor has a dual function as the detection module and the removal module; column 10, lines 23-27 and 37-47) .

Claim 11 is dependent upon claim 10. Regarding claim 11, Brennan discloses wherein the analysis module performs a feature extraction from the input signal to identify the parameter space (analysis filterbank 26 uses WOLA analysis which performs a feature extraction from the input signal to identify the parameter space; Figure 1; column 6, lines 28-67).

Claim 12 is dependent upon claim 10. Regarding claim 12, Brennan discloses wherein the removal module performs gain control (As noted above in the rejection of claim 10,Brennan's signal processor 34 determines gain adjustments).

Claim 13 is dependent upon claim 12. Regarding claim 13, Brennan discloses wherein the detection module includes a state machine for performing the gain control. As noted above, Brennan teaches that the signal processor performs the gain control. This signal processor reads on state machine.

Claim 15 is dependent upon claim 10. Regarding claim 15, Brennan discloses further comprising a calibration module for performing calibration to keep an output signal provided to a user at a specific level. Brennan further teaches of multipliers 28 which multiply each signal by a desired gain (column 4, lines 44-45). This reads on the recited claim language.

Claim 17 is dependent upon claim 10. Regarding claim 17, Brennan discloses further comprising a module for performing weighted overlap-add analysis and

synthesis to implement processing in sub-bands (analysis filterbank 26 and synthesis filterbank 30 use weighted overlap-add analysis and synthesis; column 6, lines 29-39; column 8, lines 33-65; Figures 3,3a,4 and 4a).

Regarding claim 18, Brennan discloses a system for providing protection against acoustic shock, the device comprising:

a weighted overlap add (WOLA) analysis module for transforming an input signal to a band signal (oversampled filterbank 26 uses the WOLA method, Figures 1 and 3; column 6, lines 29-39);

a feature extraction module for performing feature extraction on the input signal and for performing feature extraction on the band signal (inherent in digital signal processor 34; processor 34 determines gain adjustments based on the characteristics of the frequency band signals, column 10, lines 23-29; the characteristics of the frequency band signals read on feature extractions);

a detection module for detecting an acoustic shock event based on the feature extractions (inherent in digital signal processor 34; processor 34 determines gain adjustments based on characteristics of the frequency band signals and determines when those adjustments need to be made, column 10, lines 23-29 and 37-47; since a determination is made as to when gain adjustments need to be made, it is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this reads on a detection module for detecting an acoustic shock event);

a gain control module for performing gain control based on the shock detection and the features extracted from the input signal and band signals (digital signal processor 34 reads on gain control module because it determines gain adjustments based on the characteristics of the frequency band signals; column 10, lines 24-42);

a calibration module for applying a calibrated gain to meet a predetermined safe level (Brennan teaches of multipliers 28 which multiply each signal by a desired gain ;column 4, lines 44-45); and

a WOLA synthesis module for synthesizing the band signals to provide an output signal (synthesis filterbank 30, uses the WOLA method 30, Figures 1 and 4; column 8, lines 33-65).

Claim 19 is dependent upon claim 18. Regarding claim 19, Brennan discloses wherein the step of detecting an acoustic shock event uses a rule-based decision. As noted above, Brennan teaches that the signal processor 34 determines gain adjustments based on characteristics of the frequency band signals and determines when gain adjustments are to be made and therefore inherently comprises a detection module. It is inherent that the levels of the input signals have to be detected and are one of the characteristics that determine when adjustments are to be made and this all reads on the claim language as recited with the rule-based decision being whatever is used to make the decision that the gain needs to be adjusted.

5. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Amano et al. (US 5,136,577).

Regarding claim 21, Amano discloses a method of providing protection against an acoustic shock, the method comprising the steps of:

transforming an input signal into a plurality of oversampled sub-band signals in a frequency domain (division and decimation process part 2, Figures 4 and 5; column 8, lines 44-67);

adaptively processing the sub-band signals to remove an acoustic shock event (echo canceller group 4, Figure 5; the echo being the acoustic shock event that is removed; column 8, lines 60-column 9, line 2); and

combining the processed sub-band signals to generate the output signal (synthesis filter 72, Figure 5; column 9,lines 12-15).

Claim 22 is dependent upon claim 21. Regarding claim 22, Amano discloses processing each sub-band signal to remove a periodic acoustic shock event (Amano discloses a sub-band echo canceller group 4 that includes a group of echo cancellers for cancelling the echo in each of bands, Figure 5; column 1, lines 60-65 describes the echo canceller group 40; column 8, line 60- column 9, line 2 teaches that the echo canceller group of Figure 5 is like echo canceller group 40 of Figure 1).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 6,14 and 16 are rejected under 35 U.S.C. 102(b) as being unpatentable over Brennan et al. (US 6,236,731) in view of Southward et al. (US 5,745,580).

Claim 6 is dependent upon claim 1. Regarding claim 6, Brennan fails to disclose implementing on-line data collection of the acoustic shock event. Southward teaches of recording on-line the response to a random noise or impulse function (column6, lines 3-6). It would have been obvious to modify Brennan by recording on-line the acoustic shock event in order to provide protection again acoustic shock in real time.

Claim 14 is dependent upon claim 10. Regarding claim 14, Brennan fails to disclose implementing on-line data collection of the acoustic shock event. Southward teaches of recording on-line the response to a random noise or impulse function (column6, lines 3-6) which reads on logging the acoustic shock events. It would have been obvious to modify Brennan by recording on-line the acoustic shock event in order to provide protection again acoustic shock in real time. Brennan as modified fails to disclose that the data is recorded on a removable module. The examiner takes official notice that recorded data on a removal module such as a disc or some recording medium is well known in the art and it would have been obvious to have the record the data on a removable module to ensure that large amounts of data can be stored.

Claim 16 is dependent upon claim 10. Regarding claim 16, Brennan fails to disclose implementing on-line data collection of the acoustic shock event. Southward teaches of recording on-line the response to a random noise or impulse function (column 6, lines 3-6). It would have been obvious to modify Brennan by recording on-

line the acoustic shock event in order to provide protection again acoustic shock in real time.

8. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (US 5,136,577).

Claim 23 is dependent upon claim 22. Regarding claim 23, Amano teaches adaptively filtering the delayed sub-band signal and subtracting the sub-band signal and the result of the filtering step (subtractors 41_1-42_n Figure 5; column 8, lines 60- column 9, line 2) . The examiner asserts that there is an inherent delay due to the division and decimation part.. Amano teaches of subtracting the sub-band signal and the result of the filtering step. Amano fails to teach of adding the sub-band signal and the result of the filtering step. However, the examiner asserts that an adder is well known in the art and is interchangeable with a subtractor. It would have been obvious to try to use an adder with a reasonable expectation of success.

Claim 24 is dependent upon claim 23. Regarding claim 24, Amano discloses adjusting the filtering (Amano's use of adaptive filters reads on adjusting the filtering).

9. Claims 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (US 5,136,577) in view of Brennan (US 6,236,731).

Regarding claim 25, Amano discloses a system for providing protection against an acoustic shock, the device comprising:

an oversampled analysis module for transforming an input signal into a plurality of oversampled sub-band signals in a frequency domain (division and decimation process part 2, Figures 4 and 5; column 8, lines 44-67);

a processing module for adaptively processing the sub-band signals to remove an acoustic shock event (echo canceller group 4, Figure 5; the echo being the acoustic shock event that is removed; column 8, lines 60-column 9, line 2); and

an oversampled synthesis module for synthesizing the processed sub-band signals to provide an output signal (synthesis filter 72, Figure 5; column 9,lines 12-15).

Amano teaches of an oversampled analysis and synthesis filterbank. Amano fails to teach of using the WOLA method which is a type of oversampled filterbank Brennan teaches of using WOLA analysis (oversampled filterbank 26 uses the WOLA method, Figures 1 and 3; column 6, lines 29-39) and synthesis (synthesis filterbank 30, uses the WOLA method 30, Figures 1 and 4; column 8, lines 33-65). It would have been obvious to modify Amano by using the WOLA analysis and synthesis method for the benefit of providing more flexible and efficient processing.

Claim 26 is dependent upon claim 25. Regarding claim 26, Amano as modified discloses a plurality of sub-band periodic acoustic shock cancellation modules, each of which processes a corresponding sub-band signal (Amano discloses a sub-band echo canceller group that includes a group of echo cancellers for cancelling the echo in each of bands; 5; column 1, lines 60-65 describes the echo canceller group 40; column

8, line 60- column 9, line 2 teaches that the echo canceller group of Figure 5 is like echo canceller group 40 of Figure 1).

Claim 27 is dependent upon claim 26. Regarding claim 27, Amano As modified teaches adaptively filtering the delayed sub-band signal and subtracting the sub-band signal and the result of the filtering step (Amano; subtractors 41_1-42_n Figure 5; column 8, lines 60- column 9, line 2) . The examiner asserts that there is an inherent delay due to the division and decimation part. Amano teaches of subtracting the sub-band signal and the result of the filtering step. Amano as modified by Brennan fails to teach of adding the sub-band signal and the result of the filtering step. However, the examiner asserts that an adder is well known in the art and is interchangeable with a subtractor. It would have been obvious to try to use an adder with a reasonable expectation of success.

Claim 28 is dependent upon claim 27. Regarding claim 28, Amano as modified by Brennan discloses adjusting the filtering (Amano's use of adaptive filters reads on adjusting the filtering).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Devona E Faulk

/Devona E. Faulk/
Examiner
Art Unit 2615
2/3/2008